



Development of Kenaf (Hibiscus cannabinus)-based community integrated oil spill clean-up (US patent 7655149B1) in the Niger Delta region of Nigeria.

Posted on **March 16, 2011 4:55 pm** By [Morufat from Nigeria](#)

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Category:

Promoting a Better Environment

Project Description:

Nigeria is a significant producer of crude oil globally, and ranks fifth-largest source for oil imports in the United States. However, oil spillage, caused during oil exploration and refining, has caused massive pollution of land and water in the Niger Delta region of Nigeria, paralyzing Agriculture and causing unemployment, poverty and conflict. About 1.89 million barrels of petroleum were spilled into the Niger Delta between 1976 and 1996 out of a total of 2.4 million barrels spilled in 4,835 incidents.

In such conflict situation, a participatory strategy is urgently needed to clean up the spills to stop the loss of plants, wildlife and fisheries. This will also preserve human health, hitherto threatened by toxins in polluted drinking water while stemming poverty imposed by conflict and non-availability of land for agriculture.

The core fibre of the Kenaf (*Hibiscus cannabinus*) plant is effective in oil spill clean-ups (United States patent 7655149B1; 2010). An annual plant native to Africa, kenaf is a low-risk cash crop whose cultivation requires minimal chemical applications and helps to alleviate global warming by absorbing carbon dioxide gases due to its rapid growth rate. Although Kenaf is not new to Nigeria, understanding of genotypic characteristics is limited. Also, there is lack of public awareness and niche markets on use of kenaf core fibre in oil spill clean-up. We propose to demonstrate the use of kenaf core in cleaning oil spills as disclosed in US patent 7655149B1(2010) while developing a community-integrated, stakeholder-based strategy for cleaning the polluted land and water in the Niger Delta region.

From January to February, 2012, Kenaf varieties shall be collected from kenaf-growing agro-ecologies in Nigeria. In March, 2012, collections shall be planted at the Institute of Agricultural Research and Training, Ibadan, Nigeria. Seed multiplication, morphological and molecular characterization of the collections shall be done from March to October 2012 so as to merge duplicates. Due to high oil content in kenaf seeds which makes it lose viability easily, harvested seeds shall be dried to 12% relative humidity and conserved in a freezer in November 2012.

In August, 2012, a 3-day stakeholders' workshop shall be held at the Institute of Agricultural Research and Training outstation in Amakama, Abia state. At the workshop, stakeholders on oil spillage, kenaf production and utilization shall be brought together in a utilization fair to be held on day 1. A kenaf network shall be established. On the second day, our team will demonstrate the use of kenaf balls (imported) and locally produced core in cleaning oil spill. The audience shall be taught how to produce the kenaf core locally and use it in cleaning oil spill in their environment. On the third day, a round-up session shall be held to develop a community-integrated framework for locally producing kenaf core for use in cleaning oil spill. Public/private partnerships, employment of Niger Delta youths in producing core, and "clean-it-yourself" strategies shall be considered. A communiqué shall be issued at the end of the workshop. Niger-Delta community can benefit by being educated on cultivating kenaf, selling to stakeholders, working in kenaf core-producing companies, cleaning up oil spills, or recycling used kenaf balls. The second phase shall include installation of high capacity kenaf ball makers, identification of varieties adapted to the Niger Delta.

Team Members:

1. Morufat O. Balogun, (Team leader) Borlaug Fellow;
2. Adejoke Akinyele, Borlaug Fellow.
3. Mojisola Edema, Cochran Fellow;
4. Moses Okpeku, Borlaug Fellow.
5. Subuola Fasoyiro, Borlaug Fellow;

6. Joseph Anikwe, Borlaug Fellow;
7. Stella Williams, Fullbright Scholar-in- residence fellow
8. Abiola Idowu, Borlaug Fellow
9. Elmina Abiayi, Borlaug Fellow;
10. Kemi Mary Idowu, Borlaug Fellow;
11. Olusola Adesanwo, Borlaug Fellow;
12. Olanrewaju Bello, Cochran Fellow
13. Godwin Ogbadu, Cochran Fellow
14. Adenugba Adeola, Borlaug Fellow
15. Happiness Oselebe, Borlaug Fellow.
16. Gideon M. Adogbo, Professional Exchanges (Thematic) - Business Development

Volunteers

1. Oyegbami, Ajoke. Research Extension specialist, Institute of Agricultural Research and Training, Moor Plantation, Ibadan, Nigeria.
2. Adekoya, Plant Breeder, Institute of Agricultural Research and Training, Moor Plantation, Ibadan, Nigeria.
3. Adeniyani, O., Agronomist, Institute of Agricultural Research and Training, Moor Plantation, Ibadan, Nigeria.
4. Akande, S.R., Plant Breeder and Head, Biotechnology Unit, Institute of Agricultural Research and Training, Moor Plantation, Ibadan, Nigeria.
5. Akande, M.O., Soil scientist, Institute of Agricultural Research and Training, Moor Plantation, Ibadan, Nigeria.
6. O.O. Adeyeye, Technologist, Institute of Agricultural Research and Training, Moor Plantation, Ibadan, Nigeria.
7. Fayinminu, O. Toxicologist, Department of Crop Protection and Environmental Biology, University of Ibadan.
8. Anthony Emese, Ph. D candidate (Genetics), Department of Crop Protection and Environmental Biology, University of Ibadan.

Partners:

1. National Oil Spill Detection and Response Agency. They will facilitate the coming together of stakeholders on oil spillage by sending notification and invitation letters to them. They will also partner with us on giving adequate publicity to the event. They will jointly conduct the focus group discussions during stakeholders' forum.
2. Institute of Agricultural Research and Training, Moor Plantation, Ibadan, Nigeria.

The institute has the national mandate for the genetic improvement of kenaf. They will be involved in all stages of the project. They will provide a vehicle for transportation which will be fuelled from the alumni engagement fund.

The research farm of the institute will be used for morphological characterization. Half of the collections will be stored in the genebank of the Industrial crops improvement programme. Six volunteers will come from the institute.

Audience:

1. Inhabitants of the Niger Delta region of Nigeria. They will consequently use the technology dispensed in this project by cultivating kenaf and selling to stakeholders, working in a kenaf core-producing companies, practically cleaning up oil spills for economic returns or recycling used kenaf balls.
2. Oil producing companies. On developing a community-integrated oil spill clean-up framework, they will pay for part of the self-cleaning efforts of the inhabitants buy buying kenaf balls from them or employing them to clean their environments.
3. Kenaf Farmers, consumers and researchers
4. The federal government, through the Federal Ministry of Environment. They can also buy locally produced kenaf balls from the inhabitants or employ them to clean their environments. In the communiqué, they will be encouraged to make relevant policies.

Region:

Africa

Location:

This project will take place in Nigeria, and will be country-wide, with specific application in the Niger Delta region.

Innovation:

The methodology of using kenaf core in cleaning oil spills is an innovative United States patent recently disclosed in 2010. The participatory approach that this project will employ involves community integration, stakeholders workshop and utilization fair which has not been done earlier. In addition, kenaf germplasm collection and characterization in Nigeria has not been documented.

Photos:



Goals and Objectives:

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1. To collect and characterize kenaf germplasm diversity from kenaf-producing agroecologies in Nigeria.
2. To conserve kenaf germplasm diversity in seed bank
3. To bring together stakeholders in kenaf production and utilization in a utilization fair to facilitate exchange of information;
4. To demonstrate the use of kenaf core in cleaning oil spills to stakeholders on oil spillage and kenaf production/utilization as disclosed in US patent 7655149B1(2010)
5. To develop a community-integrated, stakeholder-based strategy for cleaning the polluted land and water in the Niger Delta region using kenaf core.

Strategy for implementing key objectives: For each objective, sub team will be constituted based on expertise and place of residence.

Timeline and Activity List:

Germplasm collection from four states: Plateau,

Benue, Niger, Kwara Jan-feb, 2012

Field planting for morphological characterization

and seed multiplication of collections March to Oct, 2012

Molecular characterization of collections May to july, 2012

Stakeholders' workshop August, 2012

Conservation of collections Nov, 2012

Report writing and submission Dec, 2012

Outcomes:

1. Establishment of a kenaf seed bank.
2. Existence of passport details of each accession.
3. Establishment of Kenaf production/utilization network
4. Awareness by stakeholders on oil spillage and kenaf production/utilization on the use of kenaf core in cleaning oil spills as disclosed in US patent 7655149B1(2010)
5. Availability of a community-integrated, stakeholder-based strategy for cleaning the polluted land and water in the Niger Delta region using kenaf core.

Detailed Budget:

Transportation

Germplasm collection (4 states, 2 Team members, 3 volunteers):

Fuel for transportation (\$0.5 / liter, 0.1litre/ km

12,000km = 1,100 litres) 550

Incidentals on car maintenance 300

Stakeholders' workshop

Transportation for team members

(16pple @ \$137.5/person) 2,200.00

Transportation for 2 farmers' representatives

per kenaf cultivation

state (4 states) @ \$90/person) 720.00

2 representatives from each Niger Delta

community in 9 states

(18 people) @ \$39.5 per person 710.00

One representative from each Niger

Delta state agricultural development

programme (9 people) @ \$ 39.5 per person 370.00

Daily transport allowance for 9 collaborators

from each Niger Delta state @ \$33.3 per person 300.00

Fuel for volunteer vehicle: 330.00

Car maintenance 100.00

Subtotal 5,580.00

Honorarium

Germplasm collection

(13 nights, 2 members, \$100 per night) 2,600.00

Stakeholders' workshop

16 members @\$83.75 each/night, 4 ights) 6,000.00

8 farmers' representatives from kenaf

cultivation state @ \$33.3 each/night, 4 nights 1,070.00

2 representatives from each Niger Delta
community in 9 states (18 people) @\$33.3 per
person per night, 4 nights 2,400.00

One representative from each Niger Delta
state agricultural development programme
(9 people) @ \$33.3 per person per night, 4 nights 1,200.00

Subtotal 13,270.00

Durable goods

Solar Freezer for seed storage 5,300.00

Jars for seed storage 200.00

Computer for project secretariat 750.00

Subtotal 6,250.00

Expendable goods

Communications (Internet access, telephone) 400.00

Moisture-proof bags for germplasm collection 100.00

Labels 50.00

Folders for workshop participants 400.00

Workshop venue, refreshments e.t.c 800.00

Reagents for molecular characterization 1,000.00

Rentage of Cloth dryer for kenaf ball @ \$50/day 200.00

Subtotal 2,950.00

Consultancy

Media and Publicity 2,666.70

Monitoring and Evaluation 333.33

Demonstration of purity of oil spill cleaned water 500.00

Subtotal 3,500.00

Salaries

Administrative assistant (\$200/ month,12months) 2,400.00

Incidentals 1050.00

Grand Total 35,000.00

Cost-sharing aspects: In-kind donations from third parties

1. Institute of Agricultural Research and Training

Vehicle for transportation during germplasm
collection (rents for \$100/day, 21 days) 2,100

Vehicle for transportation of volunteers to
stakeholders' workshop (rents for \$100 per
day,4 days) 400

Field planting of collections 500

Labour for field maintenance, germplasm conservation 550

Sub total 3,550

National Oil Spill Detection and Response Agency

Facilitation of the coming together of stakeholders,

(notification, invitation) partner with us on creating public awareness. 5,000

Grand Total of budget share aspect 8,550

Total Funding Requested:

\$35,000.00